

Kansas Common Core State Standards for Mathematics

Considerations for Virtual Learning

Background Information:

The Common Core State Standards (CCSS) for Mathematics, though containing largely the same mathematics as our previous standards, have some fairly significant changes in them that will require changes in what and how we teach mathematics in Kansas. From a topics point of view, virtually everything we had in our 2003 KS Math Standards can be found in CCSS, but many of these topics have been moved from grade to grade (perhaps most notably the earlier emphasis on operations with fractions in elementary) and there are topics in CCSS that go beyond what we had previously. In terms of content alone, at the high school level our previous standards assumed that all students would take Algebra I and some Geometry. It was implied in the state graduation requirements that most if not all students would take courses beyond what was found in the standards, but there was no assessment for these topics. In beginning to move to the CCSS for Mathematics, it is clear that these standards have articulated topics beyond Geometry and that all students will be expected to master Algebra II concepts by the end of high school.

In addition to the changes in content, the CCSS for Mathematics also includes a lengthy explanation of Mathematical Practices that are intended to guide how students learn mathematics and how they are able to use that mathematics. The CCSS for Mathematics document includes the following introductory description of these Mathematical Practices:

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important “processes and proficiencies” with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council’s report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one’s own efficacy). (page 6)

The SMARTER/Balanced consortium, of which Kansas is a member, that is working to produce our new assessments is planning to incorporate these practices into the tests at all grade levels, so we need to make sure that our students are well prepared to encounter them. This may require significant shifts away from repetitious mathematical practice toward more concept and project driven activities for students.

Tentative Implementation Timeline:

The following table summarizes the expected changes from KSDE as we move to the CCSS for Mathematics. Please, keep in mind that these are still subject to approval and change as we progress through the process.

School Year	Professional Development	Assessment	Assessment Reports
2011-2012	2011 Summer Academies, Online training, and various presentations all focused on transitioning curriculum to Common Core alignment, in particular emphasizing the Mathematical Practices in CCSS	<ul style="list-style-type: none"> - Remove some indicators from the current assessment (1-2 per grade level) - Use embedded items written to CCSS to supplement test items 	<ul style="list-style-type: none"> - Proficiency based on 2003 standards - Report on CCSS performance by CCSS Critical Area in Mathematics for each grade level
2012-2013	Continue and update materials from previous year with ongoing focus on curriculum and instruction	<ul style="list-style-type: none"> - Possibly remove additional 2003 indicators - Continue to embed additional CCSS related items 	Reporting will be similar to 2012, but there should be more CCSS items, leading to better reliability of this report
2013-2014	Continue previous work	Additional removal and embedding to achieve greater alignment to CCSS – details yet to be determined	Similar to previous two years. The intent is to provide better CCSS reports each year
2014-2015	Continue previous work	Full implementation of CCSS-based math assessments from SMARTER/Balanced consortium	Reports entirely based on CCSS

Curricular Considerations:

As mentioned in the Background section, there are some significant shifts in both content and context that students will be expected to learn. While we have a few years before the full implementation of new assessments on these, it seems unlikely that students will be able to go from our old way of teaching to being ready for CCSS in one year and the sooner we can begin to transition, the better off our students will be. In particular, for mathematics, KSDE has been recommending the following as potentially valuable activities for local schools and districts to use to align to CCSS over the next few years:

1. Begin with the Mathematical Practices section of CCSS for Mathematics. Instructors will likely need time and professional development to prepare to teach students in new ways. These practices can be incorporated independent of the content being taught, so they can be used with “old” standards materials. This will possibly be the hardest transition for teachers and students and the sooner it can be started the easier it may be.
2. Focus on the Critical Areas from CCSS for Mathematics. The CCSS for Mathematics identifies 3-5 Critical Areas for each grade level (other than high school, where the Appendix A course breakdowns may be more helpful). These are broad topics under which most, if not all, of the standards for that grade fit. At most grade levels, a significant amount of the “old” standards will also fit under these broad topics and aligning to the Critical Areas may become more of a change in how topics are approached than wholesale replacement of curriculum.
3. Supplement, as needed, the Critical Areas instruction to make certain that students are still getting the content they need to be successful on AYP assessments. While many of the “old” content can be aligned to the Critical Areas, there are some topics that have moved grades, and others that do not fit neatly under the new structure. In the short term (2011-2014), these will need to be supplemented to the Critical Areas instruction to make sure students are prepared for assessments.